KACHEMAK BAY RESEARCH RESERVE

HEADWATER STREAMS AS REARING HABITAT FOR JUVENILE SALMONIDS

ISSUE:

One of the biggest challenges for managing stream fish is having an understanding of the entire stream system from headwaters to the mouth. Headwater streams comprise, on average, 53% of total stream length in the U.S., but because they are small they are often overlooked in research and management. There is growing evidence that headwaters can strongly affect stream productivity by providing diverse habitats, and exerting a strong influence on downstream physical and chemical water properties. In Alaska, the combined contribution of headwater streams to fueling stream energy may be especially large, and we are just beginning to recognize that headwaters may also provide critical habitat for juvenile salmon.

OBJECTIVES:

1. Measure and model hydrologic relationships (groundwater chemistry, temperature and flow) between headwater streams and adjacent uplands and wetlands.

2. Measure aquatic invertebrates and fish communities at different locations along headwater streams to verify earlier findings that only included sampling one stream reach per headwater stream.

3. Sample streams following snowmelt and again in summer to determine if headwater streams provide overwintering habitat for juvenile salmon.

4. Measure the potential linkages between streams and vegetation adjacent to the streams.

HIGHLIGHTS

- Juvenile salmonids were found in most headwater stream reaches in both spring and summer indicating the importance of these headwater streams as rearing habitat for coho, Dolly Varden, Chinook and steelhead.
- A topographic wetness index is likely an effective tool for modeling headwater stream habitat and fish communities on the Kenai Lowlands.
- Groundwater inputs are an important contributor (40-60%, depending on season) to headwater stream flows, which is clearly an important aspect of overall fish habitat.

A headwater stream site of the Anchor River (above). Though it may look small, this stream provides prime rearing habitat for juvenile salmon (above right).

STATUS: IN PROGRESS

Two phases of this research are now complete.
We are embarking on new research to study the effects of alder on headwater stream productivity.

PARTNERS

- BAYLOR UNIVERSITY
- SMITHSONIAN INSTITUTE
- UNIVERSITY OF SOUTH FLORIDA

Major funding provided through the US EPA Region 10 and the Alaska Sustainable Salmon Fund

Kachemak Bay National Estuarine Research Reserve
95 Sterling Highway, Suite 2, Homer, Alaska 99603
Phone: 907-235-4799; Fax: 907-235-4794; Website: kbayrr.org